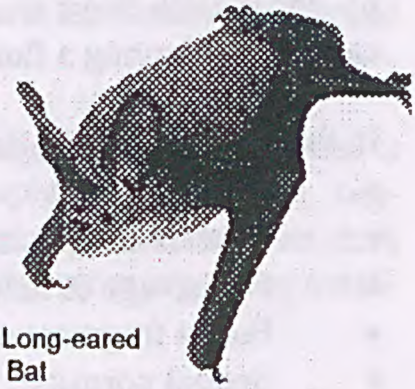
The
Ballarat
Naturalist

February 2003



Lesser Long-eared
Bat

Insectivorous Bat Activity in Relation to Foraging and Roosting Opportunities in the Wombat State Forest

**Speaker: Pat Prevett, Senior Lecturer,
Department of Environmental Management,
University of Ballarat.**

Pat's particular interest is in the insectivorous bats, of which there are 22 species in Victoria. Bats are the second most diverse and abundant group of fauna, so it follows that they will have a significant impact on the ecology. Traditionally bats have not been an easy subject to study, but recently developed techniques have improved our knowledge of this neglected field.

Harp traps were the first means by which bats could be studied in the hand; it is necessary to locate the traps on known flyways such as near permanent water in order to ensure that an accurate sample is obtained, not always easy to do. Now we can use the echo location calls (which are rarely audible to humans) by employing Anabat technology which converts ultrasonic sound to audible sound and thus enables the calls to be identified. In addition it is a non-intrusive method. (Here Pat produced a tape recording to demonstrate the sounds).

The sounds can be reproduced visually as a graph, or sonogram. The *Vespedalus* species of bats call at 41kHz; other useful parameters which aid identification include duration and frequency of the pulses emitted.

Resources required by bats include insects for food, and hollows and crevices for roosting which offer protection from predators and a secure place for the development of the young. This must offer a stable temperature and humidity; bats are very fussy about their roosting conditions due to the ratio of body surface to volume which can result in rapid heat loss.

Pat divided the bats into two categories:
a) those with long narrow wings flying at high speed over long distances above the tree canopy i.e. aerial foragers.
b) those with short wide wings flying at low speed over short distances within the canopy and having a fluttering style of flight. e.g. Lesser Long-eared bat.

In the Wombat Forest the effects of logging would cause changes in:
- Tree density
- Species composition
- Forest age structure
- Forest fragmentation, creating patches and edge effects
- Spatial porosity

Clearly such changes would have ramifications for the bat fauna. A comparison of 80-year regrowth and Shelterwood 2 harvesting shows great differences in stem density and canopy cover, implying that little consideration has been given to the needs of bats when determining logging practices.

Bats do not forage uniformly: activity is more intense in some areas than others. There is variation between species as to the strength of their needs, and insects would need to be studied too in order to understand bat behaviour. By using a UV light trap and studying the numbers and species distribution of insects it may be possible to find out whether there is a relationship between bat and insect abundance. Comparisons could be made between the various types of logging on the prevalence of Lepidoptera, Coleoptera and Diptera.

Radio-tracking enables the roosts to be found. Roosts can be categorised according to tree species, type of hollow and order of branches. Pat illustrated this point with the results of a survey following the same bat over seven nights. The bat used at least 3 different roosts over that period, and preferred senescing or over-mature trees, so more roosting trees need to be left in logging coupes.

Possible options if roost sites are lost:
- Bats becoming less specific in choice of roosts
- Fewer roosts means less shifting
- Move regularly and re-use roosts
- Larger roost area with greater flying distances
- Increase colony size so fewer roosts required for the population.

The collection of scats would help determine which insect groups form the diet of the various bat species and indicate the degree of dietary specialisation.

Editor.

Excursion: Berringa Reservoir and Historic Precinct

Eleven members set out in an expectant frame of mind ready to renew our acquaintance with the Australian bush and all the wonders it holds. What discoveries would we make? We all knew there could be no limit!

Upon arriving in Smythesdale the keen eye of John Gregurke quickly spotted a Black Kite in the town precinct and a local resident, occupied in her garden, suggested the objects of its attention were pigeons belonging to a man recently resident in the town. A Little Raven chased the Black Kite high in the air away to the north-west.

We turned off the Glenelg Highway at Smythesdale to Berringa. A White-necked Heron was spotted on a dam on private property to the left. We also passed the turn-off to Jubilee Historic Mine, a possible destination for next year's outings. We passed through Staffordshire Reef, a Pallid Cuckoo observed and its ascending notes detected.

Berringa Historic Precinct is managed by BODAFEG (Break o' Day and Forest Environment Group), some people with a sense of the value of such sites in the heritage of the district. Improvements on the site and fenced off included a trench with brick-lined walls—could it be a sheep dip? No-one dared suggested otherwise, even though it seemed too narrow and had no exit ramp. Two wells also fenced off were here—domestic water supply for farmers around the first decades of the 20th century? Most likely.

The introduced Sweet Vernal Grass abounded. We knew we might see dry country birds escaping the drought further inland. Yorkshire Fog Grass was present—usually a sign of a damper climate (J. Gregurke). Fruit trees barely persisted. Del McDonnell observed a Grey Shrike-thrush. A White-eared Honeyeater flew in.

Alongside the Berringa-Dereel road substantial brick structures were observed on the valley bank. One may have been the foundations of a stamping battery; another more easily identified as a fire box with boiler above long gone. All these were overgrown with blackberries and briars. A dam in the valley nearby was made for the mine workings, we surmised, and an aqueduct for years of plenty had been constructed. Cyanide tanks, still intact, lay downstream and a rust-coloured or copper-headed skink was sitting on a piece of rusted metal within. A Common Bronzewing was observed here too.

Certainly an age of hardy souls!

Bluestone guttering, typical of that of early Ballarat was discerned alongside the road at Berringa as we arrived at the Reservoir. A White-faced Honeyeater was seen by John. Two Great Cormorants eyed these invaders in their territory. A White-faced Heron waded in the shallows and Del observed a Swamp Harrier. BOCA had provided funding for the erection of a bird hide overlooking the reservoir.

Walking up the valley Les Hanrahan pointed to the little blue flowers of Veronica. Bird species noted were Grey Fantail, White-throated Treecreeper, Yellow-faced Honeyeater, and an assertive display by White-naped Honeyeaters harassing New Holland Honeyeaters in the environs of some Common Mistletoe. A White-winged Chough's nest was observed high on a swaying branch. On our return circuit Les, bringing up the rear, glimpsed a big koala and we all watched as it ascended a Manna Gum to the topmost branches.

As we crossed the crest of the reservoir Carol Hall observed the distinctive red-eyed White-naped Honeyeater picking insects off a spider's web.

We all partook of a picnic tea at the conclusion of an afternoon in which we saw at first hand a bit of everything as the early settlers made the transition from goldmining to farming.

Tony Johns.

December Meeting Points

- 30 members and visitors were welcomed.
- BEN Biodiversity Forum: John Gregurke reported on the forum attended by 140 people including 7 Field Naturalists' Club of Ballarat members. The participants enjoyed an interesting program of speakers and excursions. **Field Naturalists' Club of Ballarat received the Community Group Environment Award for environmental achievement during 2000-2002 and the Club will be acknowledged on the Hall of Fame Honour Board.**
- Wombat Forest Collaborative Management: Carol Hall reported on the information evening and tabled a written report on the models of collaborative management which have been used around the world.
- Syllabus 2003: Suggestions for guest speakers and excursions were sought from members.

- Geelong FNC Summer campout: Howmans Gap Alpine Centre, Wednesday 29 January to Tuesday 4 February, 2003. Inquiries should be made to Dick Southcombe.
- VFNCA March Urban Camp: Expressions of interest due by 13 December.
- Christmas break-up and barbecue to be held at Lyndsay and Lorraine Fink's, at 12 noon on Saturday 14 December.
- Ballarat Municipal Strategic Statement Review: Moved John Mildren, seconded Ken McDonnell "That Field Naturalists' Club of Ballarat supports the deletion of the low density break between Mt Clear and Mt Helen provided that the Canadian Creek be protected with an adequate buffer zone when development occurs". Carried.
- Creswick Golf Course Development: Carol Hall summarised discussions held with Forest Resort, Hepburn Shire, DNRE and Environment Defenders Office; and the development plan for stage one of the present golf course freehold land. In light of the exhibited development plan is was unclear why our objection to rezoning land to the south should be withdrawn.

  Moved John Gregurke, seconded Ken McDonnell: "That the committee meet with Forest Resort to seek more information about the proposed plans". Carried.
- Moved John Gregurke, seconded Ken McDonnell: "That a submission be sent to Hepburn Shire stating concerns about the developers following the environmental guidelines outlined in the Thomson Hay environmental report". Carried.

Show and Tell.

- Carol Hall: Photographs of VFNCA campout dinner and Field Naturalists' Club of Ballarat 50th Birthday cake.

Field Reports

- John Gregurke: Common Wedge-pea *Gompholobium heugelii* and Common Fringe-lily *Thysanotus tuberosus* flowering at Beacon Hill, Enfield SP.
- Carol Hall: 46 Freckled Duck, 6 immature Banded Stilt at Werribee. 3 Australian Spotted Crake, 1 Latham's Snipe and 2 Masked Lapwing chicks at Lake Wendouree.
- Ken McDonnell: Blue-winged Parrot in Creswick Garden.
- Frank Harrap: Echidna in Mt Helen garden.
- Tony Johns: Blue-billed Duck in Fairyland area of Lake Wendouree.
- Eileen Anderson: Swamphen and Musk Duck have young at Lake Wendouree.

Swan Nesting at Lake Wendouree

Black Swans did not nest at Lake Wendouree in 2002. Nobody can remember this happening before and it has certainly not happened during the past 37 years for which Roger Thomas has records.

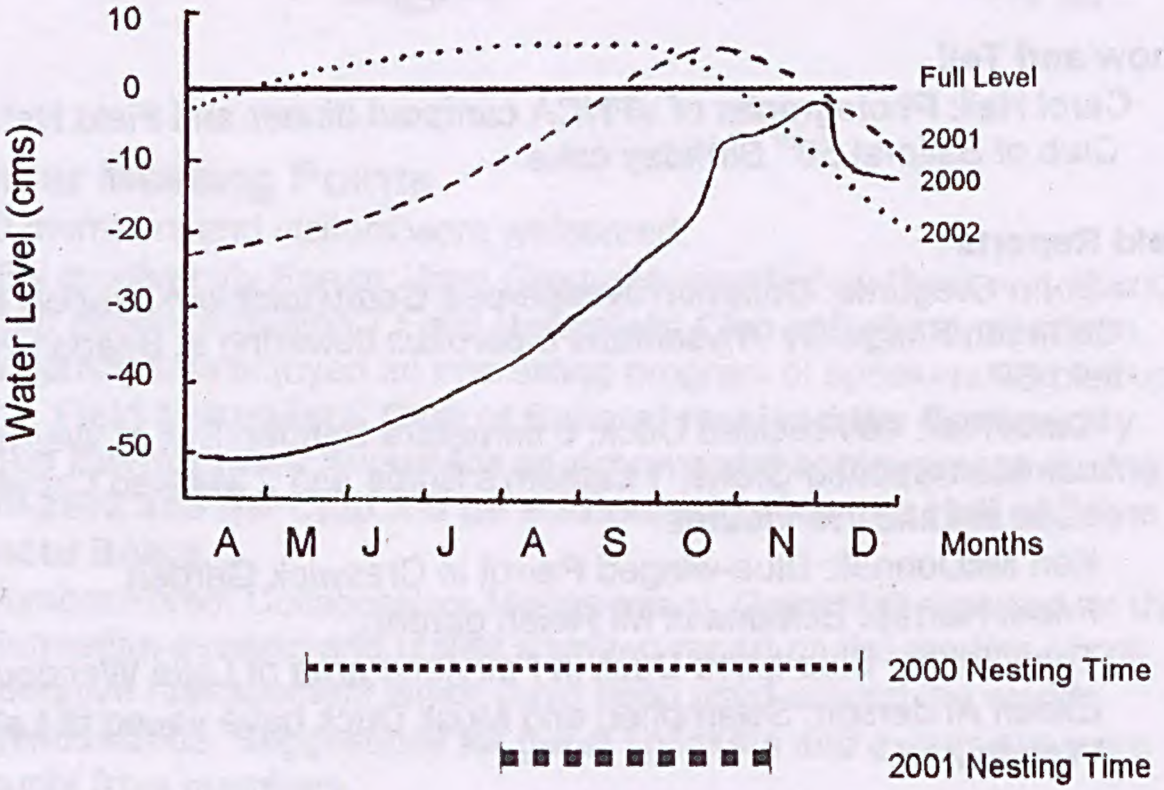
The failure of swans to nest has produced numerous theories including lack of food, carp competing for food, swans "instinctive knowledge" of the drought in eastern Australia, rising water level, decreasing water level, aerial spraying, swans nesting at alternative locations and lack of nesting materials.

None of these theories are supported by evidence and can be dismissed.

Swans caught during autumn and winter had body weights comparable with previous years so the lack of food theory can be thrown out.

It is true that water level in the lake rose by 6cm from May to August this year. However, greater rises in water level of 45cm in 2000 and 25cm in 2001 did not stop nesting. Indeed in 2000 over 50 broods of cygnets hatched while the water level was rising (Figure 1).

Fig. 1 Water Levels & Nesting Times at Lake Wendouree 2000-2002



Many other species of birds have successfully bred during 2002. Chicks of Black Duck, Musk Duck, Dusky Moorhen, Purple Swamphen, White Ibis and Masked Lapwing have been seen at the lake. This discounts the theories that there is some pollution problem in the lake environment.

It is unlikely that the swans knew there was a drought. Cygnets have been seen at Bendigo, Ararat, Werribee and Linton.

It may be that the swans failed to nest this year because the lake water level was too high. In 2002 the water level was much higher than in previous years. It reached full supply level in early May and was 6cm above full by mid August.

Further research is necessary to investigate the possibility that more swans nest in years when the lake level is low by studying the following:

- Is there any long-term information about water level and nesting activity?
- Does water level affect the availability of food and/or nesting material?
- What proportion of the swans' diet is made up of various classes of plant - land plants, water milfoil, water ribbons, spike rush, cumbungi and other plants?
- What are the factors that determine the development of the internal reproductive physiology of both male and female swans?

Swans in the temperate areas of south-eastern Australia have a usual breeding season of late winter to spring, but show great variation depending on seasonal conditions. At Lake George in NSW swans bred continuously for two years while the lake was full and then did not breed for two years when the water level dropped.

Given the variability of swan breeding patterns and the lack of evidence of any serious environmental problems at Lake Wendouree there is no reason for alarm. The swan population remains around 200 with many of the pairs which have bred in recent years still present and paired. It is likely that next year the Black Swans of Lake Wendouree will breed as usual.

John Gregurke.

Addendum:

A) John's article appeared in *The Courier* on 28/12/2002.

B) In *The Courier* of 14/12/02 it was stated that " a blockage in the regulatory draining system that enables the lake level to drop if there is significant rainfall is to blame" (for the high than usual water levels). "We inspected (the outflow pipe) and there was minimal water running out even though the lake was full. Central Highlands Water was asked to help get the water level back down." One course of bricks was taken off the outflow pipe.

C) In *The Courier* of 17/1/03 Roger Thomas had checked back to Jack Wheeler's records and states that "2002 was the first year without cygnets.....since at least 1950".

Postscript: On 27/1/2003 the lake level was minus 45cms as a result of evaporation/no rainfall since 2/1/2003 and lack of topping up from the Gong reservoir. (Ed).

Review

The New Nature

by Tim Low pub. Viking (Penguin). Limp Cover. 378 pages. $29.95

Tim is a practising biologist: he refutes the idea that "Nature is conceived as a balanced, harmonious, timeless whole", regarding the idea as "romantic myth dating back to early Greek cosmologies". He disagrees with the current view that Nature is something separate from us humans; our activities have in fact provided new opportunities for wildlife to thrive.

Examples include the Werribee Treatment Works; the spread of flying foxes into urban areas—because our gardens provide them with an ideal food source; the planting of native species outside their original localities resulting in those species becoming "weeds". Land clearing and the development of paddocks encouraged kangaroos to multiply—and so his theme goes. Probably he could have made his point in fewer pages but the large number of examples makes for fascinating reading as he looks at the changing concepts of National Parks, and how urban niches are used—and the fact that species don't always need pristine "natural" environments: they are often very adaptable and not especially choosy.

Finally he points out the radical climate and geomorphological changes undergone by the world during the Pleistocene era, that living things adapted to those changes and will continue to do now that they have humans to contend with - just another change in the constantly evolving natural world of which humans are an integral part.

(Ed).

When it comes to the birds, most males just don't get it!

Dr. Raoul Mulder of Melbourne University's Zoology department, who is the supervisor of the research work being done on the Lake Wendouree swans, has also interested himself in the habits of the Superb Fairy-wren. Bary Dowling of *The Age* read his work, and readers might find Bary's interpretation of the results interesting; here is an extract *(The Age 12/12/02)*.

"These wrens are not Mormons. When you see a brilliant blue male among a group of brown birds there is only one wife (if she is present), and she has a brown tail. The rest are likely to be adult males—brown birds with blue tails but without blue caps and vests—sons from previous broods in non-breeding plumage. They are encouraged to remain, perhaps for years, to help feed and protect the next brood, provided they remain subservient.

It seems that fairy-wrens are socially monogamous and mate for life, but are genetically promiscuous. The female watches any flash, robust male intruding into her territory, often holding a yellow petal, to display for her. For the right one she will surreptitiously leave the nest, mate with him, then nip back home. DNA tests show that 100% of chicks were hers but an average of 76% were not her mate's.

What is in it for the male? Firstly he passes on his genes to 24% of the chicks, brood after brood, year after year while most males get nothing, and he may get many offspring from other females. The dominant male is extremely robust. He must, with helper sons, feed the young, care for fledglings, repel other males and keep those helper sons subservient.....However when the chores are done he will visit females in surrounding territories, often with a yellow petal in his beak—his buttonhole. He never presents a petal to his mate, their courtship is brief and basic.

So among most Superb Fairy-wrens, most males never get it. Nor do most females. Mothers drive young daughters away, usually to their doom—they have no territory to go to, no male to protect them. Most fairy-wrens of both sexes die within two years, but a few may live for 12 or 13 years.

Gene-passing for many fairy-wrens is impossible because they cannot stay alive. In Mulder's study, between 40% and 60% of nests were preyed upon. Probable predators included rats, snakes, cats and foxes, but the major predator was pied currawongs, which fed fairy-wren nestlings to their young.

Young males stay at home as helpers because there is a permanent shortage of females, and of territories to go to. But some make it. They must of course be in that bright blue breeding plumage. Breeding males shed their blue feathers when the season is over and moult into plain winter brown called eclipse plumage. Some may stay in eclipse for 8 months, others for only a few weeks, and these have a head start when presenting themselves for consideration. A very few will moult from blue to blue and be ever-ready.

The males certainly work, but females build the nest and incubate the eggs that hatch in about 2 weeks. The young fledge about 2 weeks later and, often within days, the female is at work building another nest."

Variability of Rainfall within Ballarat

On 20/1/2003 *The Courier* published a set of rainfall records for Ballarat from 1908 onwards. I have kept records here in Wendouree since the early 1980s and thought readers might like to compare yearly totals from the official Ballarat weather station (at the airport) with those I obtained. Here are the figures (in mm) for the last 11 years:

Year	Ballarat	W'ree	Year	Ballarat	W'ree
1992	876	943	1998	654	761
1993	833	988	1999	599	671
1994	513	555	2000	610	681
1995	687	774	2001	589	701
1996	753	942	2002	490	572
1997	523	536			

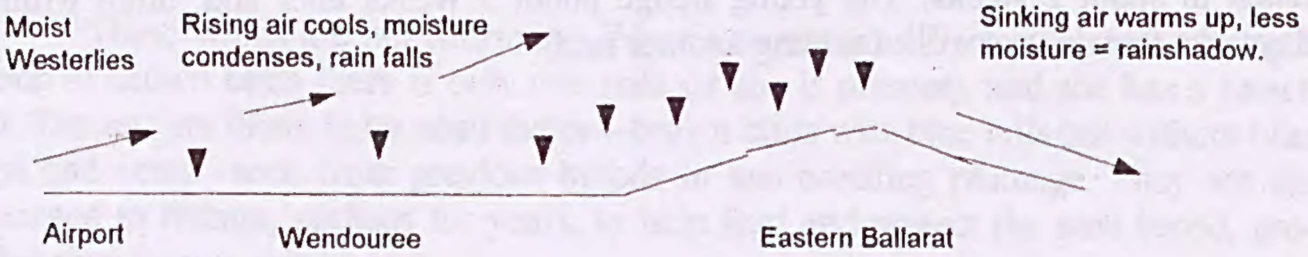
Recordings made by John Gregurke, also in Wendouree, show nearly identical totals so the location of my rain gauge in respect of buildings, trees etc. and type of gauge is immaterial. An inspection of monthly totals shows that the differences are not confined to any particular season. So why would such consistent differences occur between two areas 4 km apart and at the same altitude (440m)?

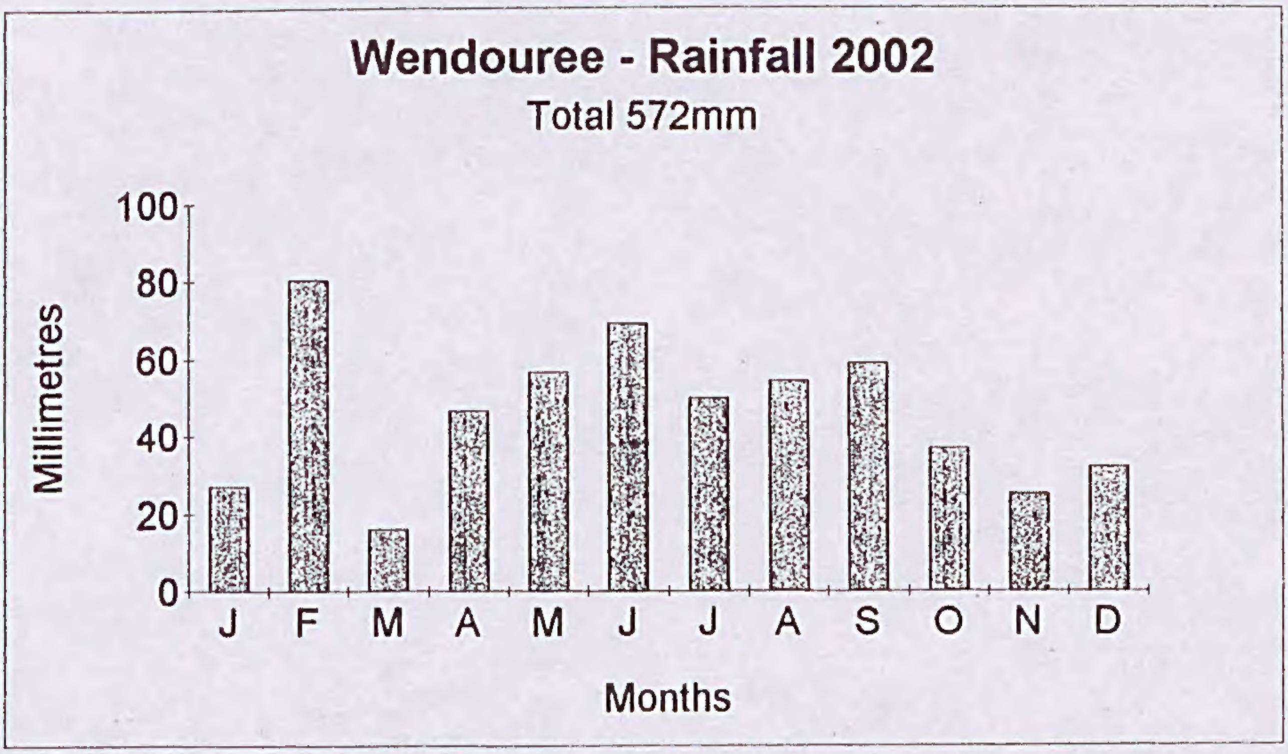
The isohyets for the region as depicted in the LCC maps show the 600 mm isohyet circling around Lake Burrumbeet, the 650mm isohyet sweeping through Alfredton and Wendouree West, the 700 mm line crosses Creswick Road east of the Lake while the 750 mm isohyet runs through Nerrina to Mt. Clear and the 800 mm line centres on Mts. Warrenheip and Buninyong, with decreasing falls south and east of that point.

Presumably the trend to increasing falls from west to east is determined by the higher topography of the Ordovician hills running south from Creswick through eastern and southern Ballarat which results in orographic rainfall from the moisture-laden westerly winds. Points east of the range are then in a rainshadow.

Does the lifting effect (and thus the rising, cooling and condensation of moisture to form rain) of the higher ground begin on the flat, western outskirts of the town?

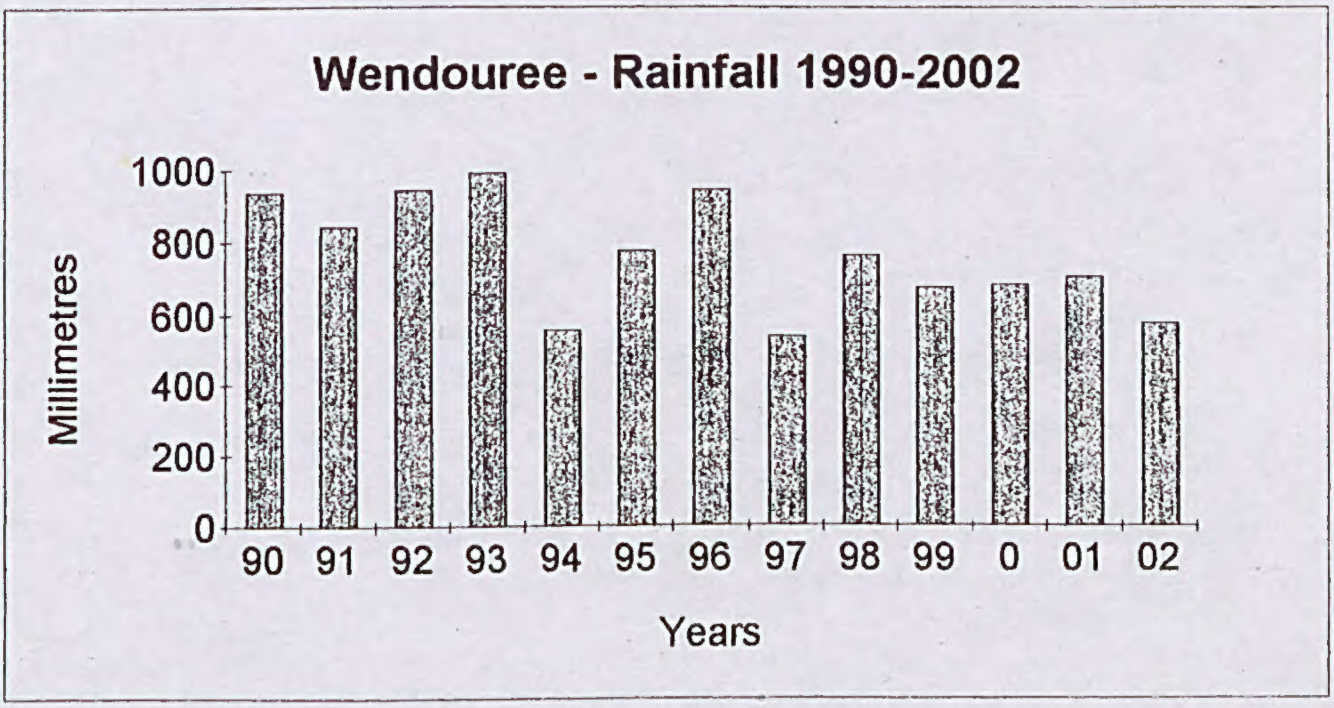
Editor.


Moist Westerlies
Rising air cools, moisture condenses, rain falls
Sinking air warms up, less moisture = rainshadow.
Airport
Wendouree
Eastern Ballarat



Annual average rainfall for Ballarat: official figure 710 mm

Annual average rainfall for Wendouree 1990-2002 761 mm



Calendar

February

Fri. 7	Meeting: Martin Scuffins: *The Hawk and the Hunter.*
Sun. 9	No excursion due to extreme drought and fire weather conditions.
Tues. 25	Committee Meeting @ Helen's, 7.30pm

March

Fri.-Mon. 7-10	VFNCA Camp-out and AGM, Melbourne.
Fri. 14	FNCB AGM and Members' Slides *"On Terra Firma".*
Sun. 16	Excursion: Beachcombing at Pt. Roadknight. Leaders—committee.

Supper Duty: **Feb.** Del McDonnell.

Committee

President .... Mrs. Carol Hall
Vice-President .... Mr. Greg Binns
Secretary .... Mr. John Gregurke
Treasurer .... Mr. Bob Curtain

Miss Helen Burgess..........
Miss Maureen Christie.......
Mrs. Claire Dalman..........
Mrs. Carol Hall (Editor).....

Mr. Les Hanrahan...........
Mr. John Mildren.............
Mrs. Kay Preston............

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Website: www.ballarat.yourguide.com.au Click on *Local Info.* Search *Environment.*

Meetings are held at the Ballarat Horticultural Centre, cnr. Gregory & Gillies Sts (VicRoads 254 F8) on the first Friday of the month at 7.30pm.

Excursions: Depart from Creswick Plaza, Creswick Rd., Ballarat (VicRoads 255 M10) at 9.30 am unless otherwise specified.

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